source or air freshener. The resultant gel is homogenous and transparent in appearance and possesses a uniform and continuous texture. The gel composition includes fragrant volatile components distributed substantially uniformly throughout the composition and capable of evaporating over a predetermined period of time to impart a desired fragrance to the surrounding environment.

Another object of the present invention is to provide a gel composition and method of making the same in which the resultant gel is capable of suspending a variety of solids therein, and particularly solids in the form of botanicals that retain a natural and attractive appearance even after immersion in the gel composition.

The foregoing objectives are achieved in a transparent gel composition including a water-soluble gelling agent, a fragrance, a surfactant and a cosolvent. The gel composition may be prepared by a method that includes the steps of preparing a gel mixture comprising the foregoing components and cooling the gel mixture to a temperature of about 38° C. to about 40° C. Botanicals may be added to the gel mixture before it is cooled completely.

These and further objects of the invention will become apparent from the following detailed description.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT(S)

The above objectives may be achieved in a transparent gel composition and method of making the same. The composition comprises an aqueous gel, a fragrance, a surfactant and a cosolvent. The aqueous gel includes a gelling agent, such as a modified polysaccharide gum. Botanicals may be suspended in the gel composition for decorative effect.

The preferred gelling agent to achieve the desired transparent, shiny gel is a modified polysaccharide, for example, a muccopolysaccharide. The gelling agent is crosslinked in the presence of a cationic crosslinking agent. KelcoGel gellan gum has been used successfully as a gelling agent, although other gelling agents also may be used. Cationic crosslinking agents are preferred for optimum clarity and gel structure. Potassium citrate is the preferred crosslinking agent. Satisfactory results also may be achieved with the use of other cationic crosslinking agents such as water-soluble calcium citrate and magnesium chloride.

The gel composition possesses a suitably low toxicity and low flammability for its intended use in a household. In some embodiments of the present invention, the gel composition may resemble jelly or preserves, particularly if the composition has a fruity fragrance or pieces of fruit are suspended in the gel. In such instances, an aversive agent (i.e., a nontoxic substance with a bitter or otherwise unpleasant taste) may be added to discourage inadvertent consumption of the gel composition. Bitrex (dentantonium benzoate) is a preferred aversive agent.

Under some conditions, the gel composition may provide a suitable medium for the growth of microorganisms. The growth of such microorganisms in the gel typically would cause the gel to develop a sour odor. Mold growth also may appear on the surface of the gel. To discourage the growth of such organisms and maintain the pleasant fragrance of the gel, a suitable preservative or microbiocide also may be added to the gel composition. Kathon microbiocide (a combination of methylchoroisothiazolinone and methyl isothiazolinone) is preferred for convenience and clarity. Satisfactory results also may be achieved using potassium sorbate or sodium benzoate.

The fragrance is selected so that its bright, effervescent "top notes" are balanced with the heart, or "middle notes." The vapor pressure of the fragrance at 20° C. preferably does not exceed 0.1 mm Hg. Preferably, specially denatured alcohol, such as alcohol 40–2, is added to enhance the fragrance top notes. The specially denatured alcohol, when present, also may assist in solvating the fragrance and maintaining the initial clarity of the gel composition. The alcohol concentration preferably is less that 3% by weight of the gel composition to assist in maintaining compliance with regulations concerning the emission of volatile organic compounds.

A cosolvent, such as dipropylene glycol, may be used to reduce the interfacial tension between the fragrance oil and water and to assist in the movement of the oil through the gel matrix. Thus, cosolvents tend to moderate the evaporation rate of the fragrance and assist in maintaining a consistent odor perception. Preferably, the cosolvent is water-soluble or at least has an affinity for water. In addition to dipropylene glycol, compounds such as diethyl phthalate, benyzl alcohol, benzyl benzoate, propylene glycol and glyceryl triacetate may be suitable as cosolvents to slow the evaporation rate of the fragrance. Dipropylene glycol is preferred because it assists it contributes to the clarity of the gel product. Compounds that may be suitable for use as cosolvents to enhance the evaporation rate of the fragrance include ethanol and isopropanol.

In addition, the fragrance is selected so that the perceived fragrance dispersed into the air remains consistent during the desired period of use, without any untoward diminution of the perceived intensity or quality of the fragrance over time. This may be accomplished, for example, by a combination of "headspace analysis" and supercritical fluid extraction techniques. Headspace analysis involves the quantitative and qualitative analysis of the air over fragranced gel compositions of varying ages to determine the olefactive differences between fresh and aged products. The fragrance may be adjusted to keep these olefactive differences within an acceptable range, thereby avoiding sour or "off" odors sometimes associated with aged products. Supercritical fluid extraction techniques involve the passing of high pressure carbon dioxide through fragranced gel compositions of varying ages to extract the fragrance from the gel. These extracts are analyzed by gas chromatography to determine the differences in the types and amounts of various fragrance components, and particularly volatile esters, present in the fresh and aged gels as a result of selective evaporation. Persons skilled in the art of fragrance formulation and modification can use the results of these analyses to adjust the fragrance constituents to achieve a result that satisfies consumer expectations.

The preferred surfactant is a nonionic, ethoxylated alkyl phenol such as Rohm & Haas Triton X-102. Nonionic surfactants are preferred because the provide the best clarity and highest activity. The surfactant should have a low odor and a high hydrophilic-lipophilic balance for optimum solubilizing of the fragrance oils. Satisfactory results also may be achieved using other nonionic surfactants, such as nonyl phenols and ethyoxylated alcohols, with similar properties.

The clarity of the gel product is a function of the amounts of fragrance and surfactant present in the gel composition. Thus, the type or amount of surfactant may require adjustment if the type or amount of flagrance is changed. In addition, when certain surfactants or combinations of surfactants are used with particular fragrances, the gel composition may become unstable as the temperature of the product is decreased. This instability typically is manifested by a clouding of the product as the temperature of the product passes below the "cloud point," indicating a break-